

Appendix E

Population Projections

From: Adelamar N. Alcantara, Ph.D. [dalcant@unm.edu]
Sent: Monday, July 08, 2002 12:32 PM
To: Amy Lewis
Subject: revised rio arriba projections



rio arriba revised
7_02.xls (6...



Card for Adelamar N.
Alcantara...

Amy:

I tried to send this but it didn't seem to have gone through--it didn't show up in my sent mail. At any rate, I finally finished the revised projections for Rio Arriba. It took longer than I had anticipated. I needed to redo all the trends in light of the Census 2000. The original projections underestimated Rio Arriba for two reasons: 1) the number of housing units that we could obtain from all possible sources as it turned out was lower than what was ultimately counted in the Census by as many as 3500 housing units. The building permit records and the mobile homes reported to the state and county were incomplete; 2) migration as based on the housing unit method, the IRS returns and even the school enrolment indicated low to negative (net) migration to Rio Arriba County. With the availability of the Census 2000, I was able to do an indirect estimation of migration using what is called a "survival technique," wherein the 1990 Census counts were moved forward to arrive at an estimated 2000 population, without migration. The results from this procedure were compared with the Census 2000 counts and the difference between the expected and the actual 2000 counts may be attributed to migration. Conversely, the Census 2000 counts were "reverse" survived to estimate a 1990 population; these numbers were compared with the actual 1990 count, and the difference is considered the result of migration. The average of these two numbers indicated an annual net migration of about 300 people. The results from other migration indicators--IRS returns and driver licenses were also factored in and an average of 128 annual net migration was used in the projections. The mortality and fertility components were adjusted as well to include recent data on births and deaths and the Census 2000 population count. Overall, by 2060, Rio Arriba's population is higher by more than 7,000 people than the original projections.

Los Alamos County was over projected by about 4.86% (19234 vs 18343 Census 2000). I am not too concerned about correcting the figures for Los Alamos because with the increased role of Los Alamos Laboratories in homeland defense research, the ultimate population will be close to what was originally projected.

The error for Santa Fe was less than one per cent (.67%) than I do not think it is necessary to make the revisions.

Regards.

Dely

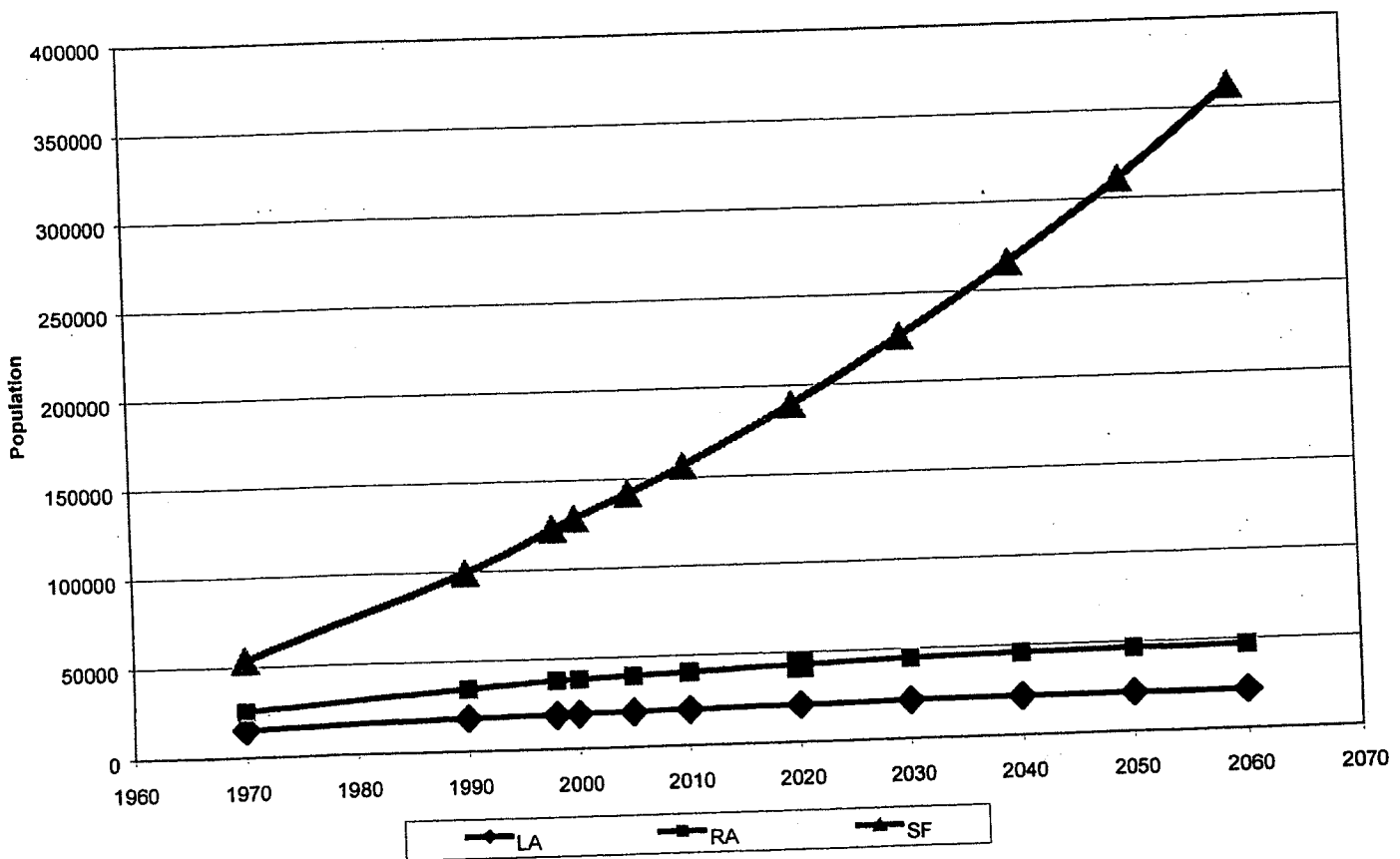
Table 3
Revised Most Likely Regional and County Population Series
July 1, 2000 - July 1, 2060

| As of July 1... | Region | | | Tri-County |
|--------------------|------------|------------|----------|--------------|
| | Los Alamos | Rio Arriba | Santa Fe | Region Total |
| 2000 | 19,234 | 41,307 | 128,429 | 188,969 |
| 2005 | 19,573 | 43,132 | 141,660 | 204,364 |
| 2010 | 19,913 | 45,058 | 156,279 | 221,250 |
| 2015 | 20,342 | 46,953 | 172,164 | 239,459 |
| 2020 | 20,722 | 48,630 | 189,258 | 258,610 |
| 2025 | 21,067 | 49,975 | 207,908 | 278,950 |
| 2030 | 21,289 | 50,996 | 225,934 | 298,219 |
| 2035 | 21,490 | 51,806 | 245,029 | 318,325 |
| 2040 | 21,627 | 52,500 | 265,606 | 339,733 |
| 2045 | 21,704 | 53,109 | 287,889 | 362,702 |
| 2050 | 21,761 | 53,666 | 310,945 | 386,372 |
| 2055 | 21,811 | 54,172 | 335,652 | 411,635 |
| 2060 | 21,854 | 54,645 | 362,117 | 438,615 |



Population/Demand Subcommittee Report to the Jemez y Sangre Water Planning Council

Three Counties' Population (BBER "Most Likely Projection")



November 2000

November 27, 2000

To: Jemez y Sangre Water Planning Council

From: JyS WPC POPULATION/DEMAND SUBCOMMITTEE

We transmit herewith the "Population Projections for the Jemez y Sangre Water Planning Region", prepared for the Water Planning Council by the UNM Bureau of Business and Economic Research (BBER).

The "Most Likely" BBER projections show the population of Los Alamos County rising very slightly from 19.2 thousand now to 21.9 thousand in 2060. For Rio Arriba, the numbers are 38.4 thousand and 46.9 thousand. Santa Fe County would grow from 128.4 thousand to 362.2 thousand. All of Los Alamos County lies within the hydrographic study area; for Rio Arriba, 57% of the population now lives within the study area, and that proportion would rise to 68%. For Santa Fe, the present proportion of over 94% will fall to 83% because of the anticipated rapid growth of the southern part of the county which lies in the Estancia basin and outside this study area.

BBER also projected population changes for each of the ten sub-basins in the study. Appendix Table 2-2 summarizes the 2000-2060 projections for the counties, the portion of the counties within the study area, and the sub-basins. We have appended that table to this covering message as the most concise summary of the "Most Likely" projections. This subcommittee believes that the "Most Likely" series provides a reasonable set of projections for further analysis of water supply and demand for the region and its sub-basins. We would remind the Council that that projection, like the three others in the BBER report, is not constrained by water availability. It assumes that water will be available for the projected populations. This rule was followed -- not to suggest that there will necessarily be enough water -- but rather to avoid prejudging the conclusions of the full supply/demand study. We leave to the Council a description of what steps might be necessary if likely demand exceeds anticipated supply.

Let us call your attention to several characteristics of the "Most Likely" projection. Los Alamos' population would be almost static. Rio Arriba County's growth is expected to come almost to a halt by 2060. For Santa Fe, the RATE of growth would slow down, but the actual NUMBERS would be growing twice as fast in 2060 as they are now (Tables 2-11 and 2-12). This reflects the projection of migration. For Los Alamos and Rio Arriba, there has been a minor net out-migration in recent years, and the projection calls for the pattern to intensify in Los Alamos and continue in Rio Arriba. For Santa Fe, on the other hand, the rate of immigration is expected to decline but the actual numbers will rise (Appendix Tables 2E-1 and 2E-2).

Santa Fe County's overwhelming demographic dominance is projected to grow. It now constitutes 69% of the three counties' total population; by 2060 it will constitute 84%. Among the sub-basins, the Santa Fe River sub-basin will continue to dominate the demography (and hence the water demand) in the region. It constitutes 55% of the Region's population now and will still constitute 44% in 2060, despite the anticipated rapid growth of the adjacent North Galisteo, Tesuque and Nambe-Pojoaque sub-basins.

In order to provide a rough starting point for translating human numbers into water demand, BBER calculated an historical per capita rate for public, commercial and domestic water use in each county from a 1997 study by the State Engineer. It then multiplied those figures by the "Most Likely" population projections (Tables 4-1 and 4-2). Totaled, the withdrawals rise from 25,819 acre-feet per year (afy) now to 65,910 afy in 2060, or 2.55 times the present amount. This is not intended to be a sophisticated projection of water use; it simply shows how much water the projected populations would use with current use patterns. (These figures do not include agricultural or industrial use. They are for the entire counties, not just that portion in the study area. The difference is particularly important for Rio Arriba and Santa Fe Counties, where a substantial fraction of water supply and irrigation use occurs in areas outside the study area.)

Projecting the future is a thoroughly uncertain art. As the BBER study observes, there are variables that can throw any projection off. Among them:

- The most dramatic would be a shortfall in the water supply, driven either by drought or by the rising demand itself. Even news stories of water shortages could trigger changes in immigration levels, which would cause sharp changes in the projections for Santa Fe.
- Migration patterns could also be affected by changes in the U.S. economy, or by changes in immigration law which reduce the growth of those parts of the country that now send domestic migrants to Santa Fe.
- The projections would move down sharply if fertility among the region's Hispanics should veer downward toward the very low levels now general in the industrial world.

Chapter 3 lists a number of contingencies that could invalidate present population or water use projections. It examines in detail what might happen to total employment under two contrasting hypothetical scenarios: closure of the laboratory at Los Alamos or, on the other hand, the movement of a major employer into the study area.

Because the future is uncertain, there are three projections in the study, other than the "Most Likely" projection. The "Low" projection is based on an assumption that out-migration from Los Alamos and Rio Arriba counties sharply accelerates, and net immigration into Santa Fe slows down dramatically, turning negative in 2040. That assumption deeply influences the growth rate in Santa Fe County, which has in recent years been driven mostly by high levels of domestic and foreign immigration. The "Low" projection would lead to a 2060 total county population of 255 thousand, 30% less than the 362 thousand in the "Most Likely" projection (Appendix Table 2E-2).

The "Low" figure for the 2000 population of Santa Fe county lies between the upper and lower projections in the so-called "Prior report" of 1994. By 2020, the last year of the Prior projection, the BBER "Low" series is 7% higher than the Prior upper projection, and the "Most Likely" series is 17% higher (Appendix Table 2D-3). This is a cautionary note for planners who have been using the Prior projections.

The other two projections in the BBER study are the mathematical projection (pp.28-33) and a projection of employment growth (Chapter 3). Those projections give a graphic image of what would happen if population and economic activity should continue to grow at the rate they have grown since 1980 (in the mathematical projection) or since 1960 (in the employment projection). Both would lead to wildly accelerating numerical growth. By 2060, the mathematical projection for the three counties is 823 thousand, nearly twice as high as the "Most Likely" projection. The baseline employment projection (for the study area alone) implies an even higher population. If the ratio between employment and population should stay as it is, that employment projection suggests a total population of something like 893 thousand.

Those are valid statistical projections, but common sense suggests that they are thoroughly unrealistic. Such growth becomes increasingly unlikely in the light of the physical and resource constraints of the area. The projections are a useful warning, however, as to where recent rates of growth -- and the policies that made them possible-- would lead the area. They are not simply imaginary. By way of example, Clark County, NV (where Las Vegas, NV, is located) had about half the population of Santa Fe County in 1940. It sustained an annual growth rate of 10% until 1970 and about 5.3% since 1970, which is unlike any sustained growth this Region has experienced or anticipated. Its population has just passed 1.2 million, nearly double the Albuquerque metropolitan area.

Chapter 5 of the BBER report, which relates the projected demand to supply, lies somewhat outside the sub-committee's mandate. Your sub-committee recommends that the Council treat this as one interesting way of looking at supply and demand, but hardly as the definitive answer. We see several problems in the assumptions concerning Santa Fe County underlying that exercise. We will not detail them at this point, since the new Supply & Demand Subcommittee will be examining the balance at considerably greater length and with the advantage of the supply data prepared for the Technical Subcommittee. The new Subcommittee can study the calculations in Chapter 5 of the BBER report if it seems appropriate.

One final note about the report: Appendix Tables 2-6 through 2-23 break out the growth anticipated in the "Most Likely" scenario by age and sex. Those tables are a by-product of the cohort method used in making the projection. BBER included them in the report at the sub-committee's request because they may be of use to county and city planners in estimating future changes in school age populations, retirees, and the distribution of the working age population.

The BBER calculations were made before the results of Census 2000 are available. The Census figures will almost certainly be somewhat different from the BBER estimates, but

minor differences will not vitiate the conclusions of the report. Only if the Census figures turn out to be substantially different from the "Most Likely" projections for the year 2000 will it be necessary to re-examine the assumptions that went into the report.

We will close by underlining that no projection of the future can be made with confidence. What the attached report does is to provide the best available picture of the future as seen at this time. Things will change. As the variables described in the report begin to change, the demographic projections should change. The issues will also change, and problems will become more or less intense. We hope that the governments and people of the Region will realize that such change demands an ongoing review of the evidence, and it is up to them to adjust policies in the Region to deal with a changing future.

With this report, your Subcommittee on Population and Demand believes that it has completed its charge and herewith dissolves itself.

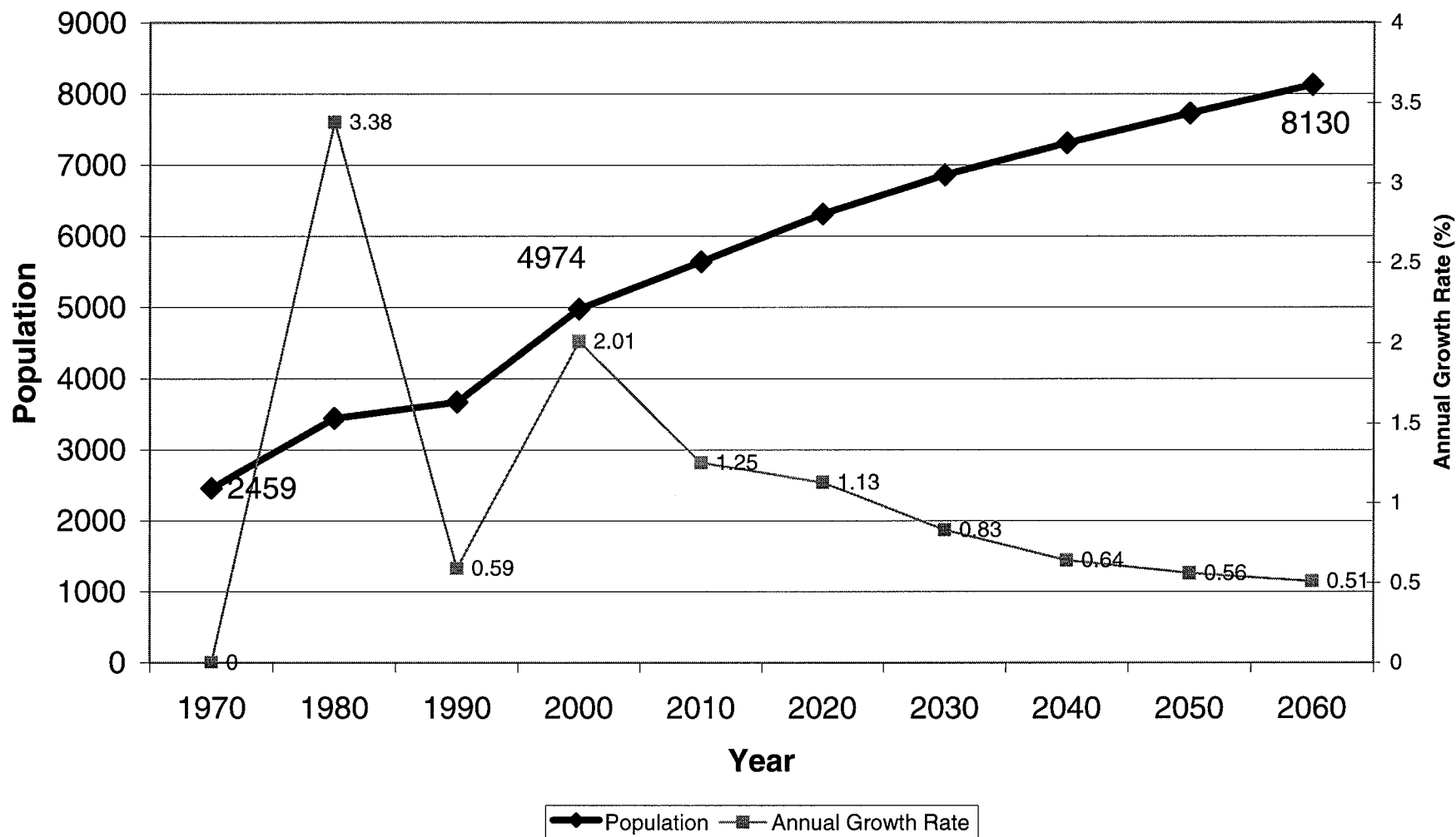
Population Subcommittee:

Chris Banet, U.S. Bureau of Indian Affairs
Walt Chapman, Santa Fe Area Home Builders Association
Donald Dayton, Eldorado Area Water & Sanitation Dist.
Mary Helen Follingstad, NM Interstate Stream Commission
Janet Gerwin, Los Alamos League of Women Voters
Moises Gonzales, Rio Arriba Planning and Land Use Department
Lindsey Grant, Writer (who prepared this summary)
Amy Lewis, City of Santa Fe
Ray Nichols, Eldorado Area Water & Sanitation Dist.
Edith Pierpont, Santa Fe League of Women Voters
Cyrus Samii, City of Santa Fe
Judy Stevens, Santa Fe Land Use Resource Center
Donata Traverso, North Central NM Economic Development District

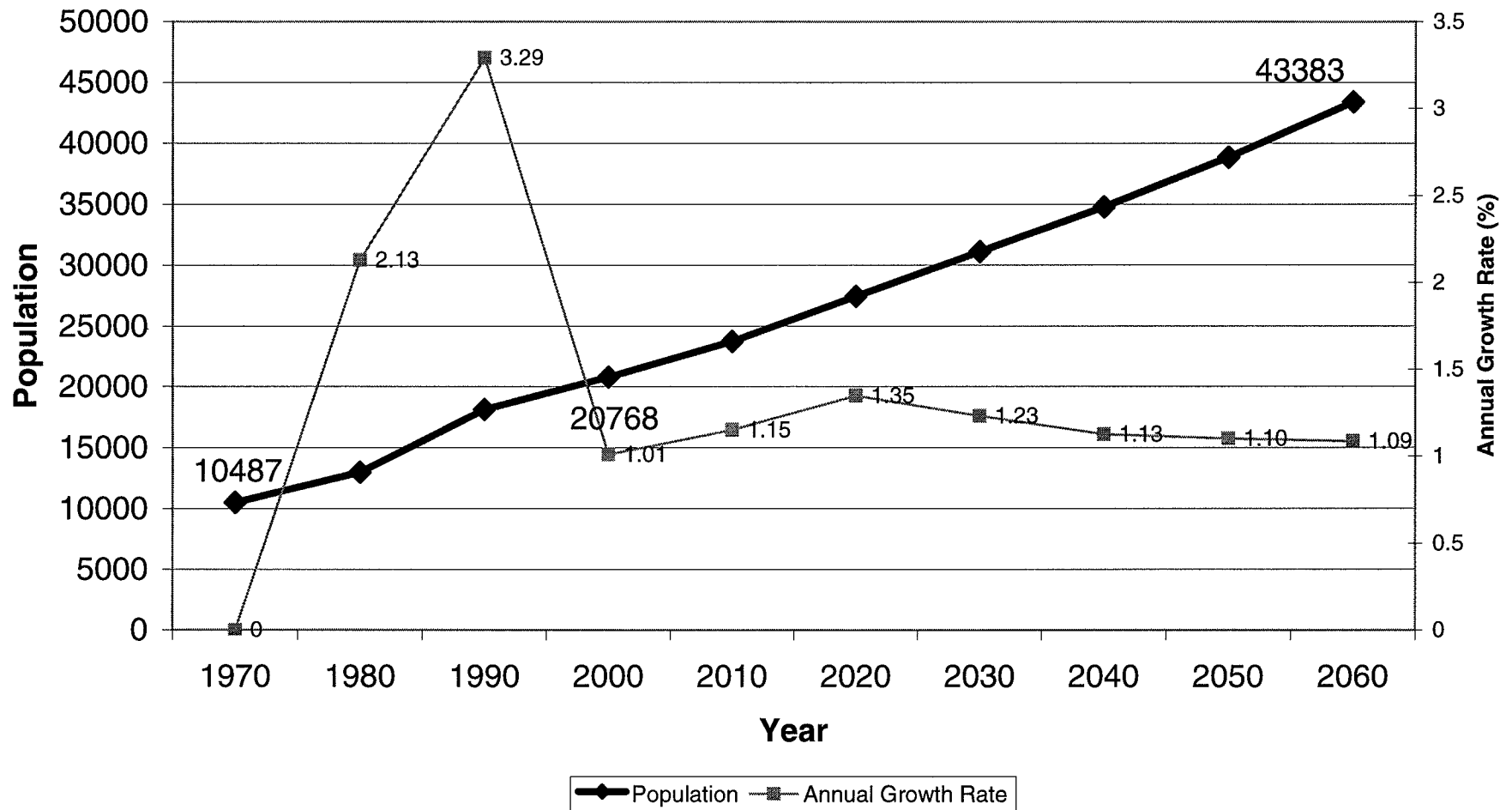
ATTACHMENTS:

- BBER report Appendix Table 2-2
- BBER "Population Projections for the Jemez y Sangre Water Planning Region"

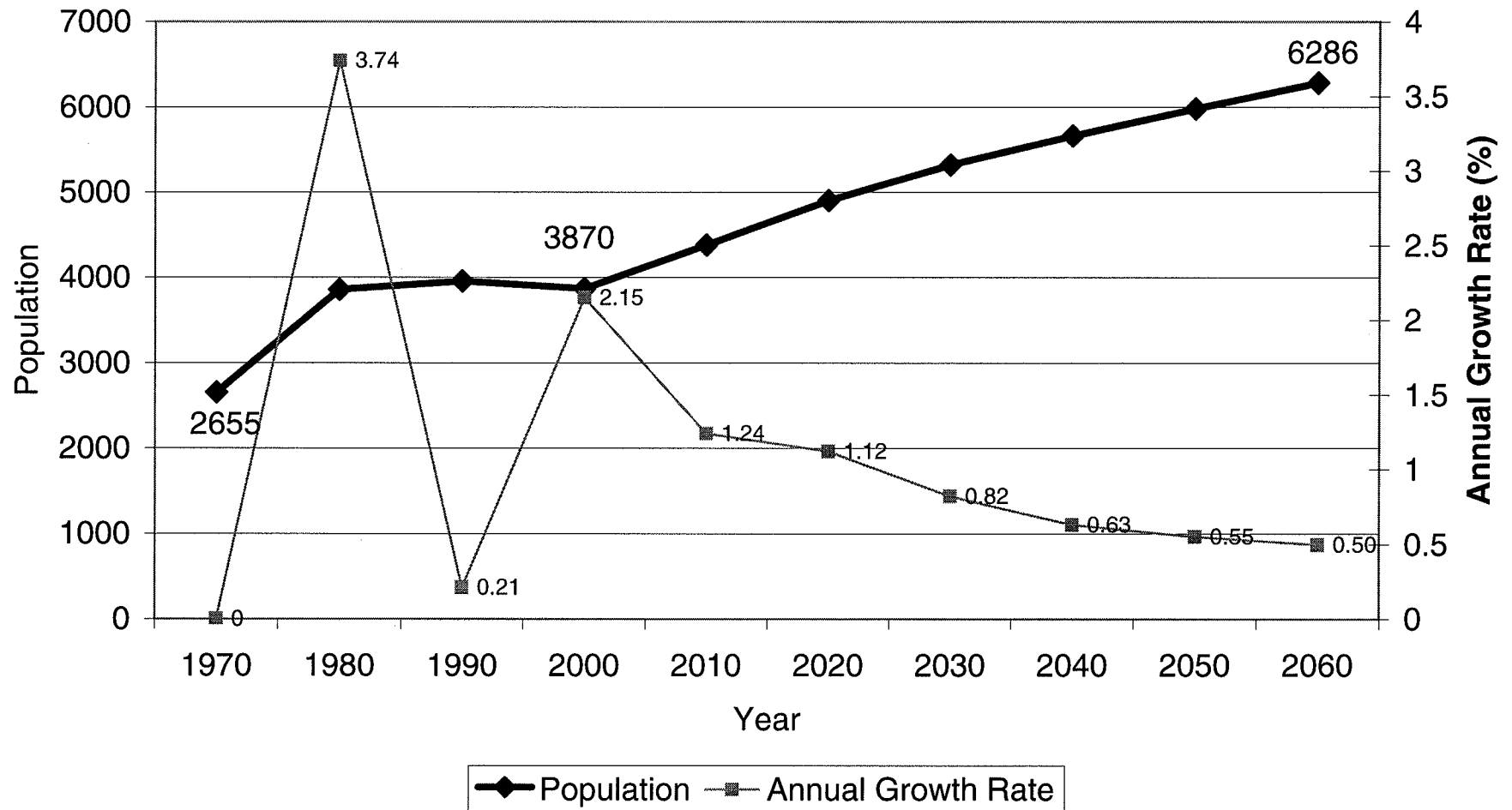
Most Likely Population Projection for the Velarde Sub-Basin (BBER, 2000)



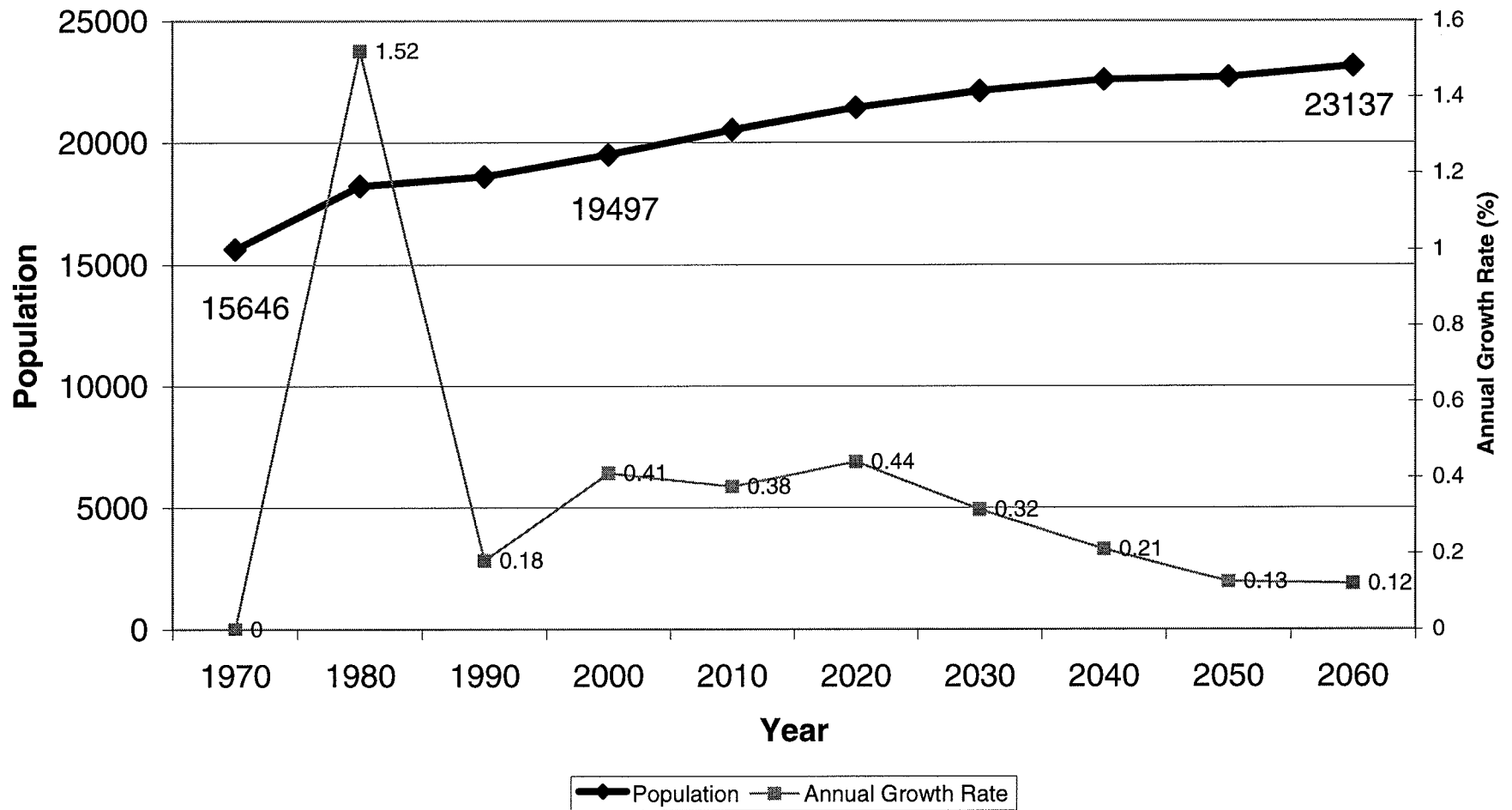
Most Likely Population Projection for the Santa Cruz Sub-Basin



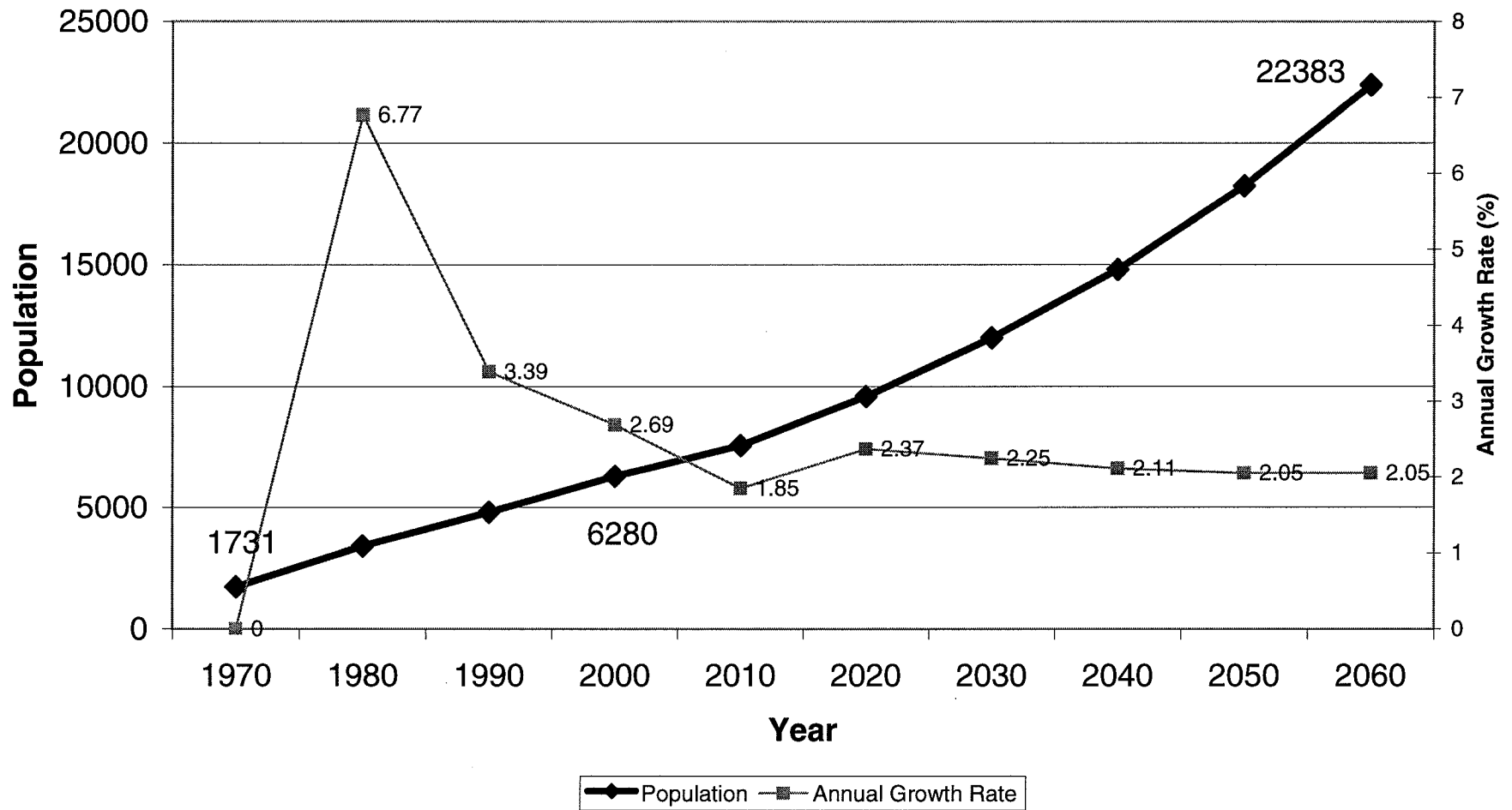
Most Likely Population Projection for the Santa Clara Sub-Basin



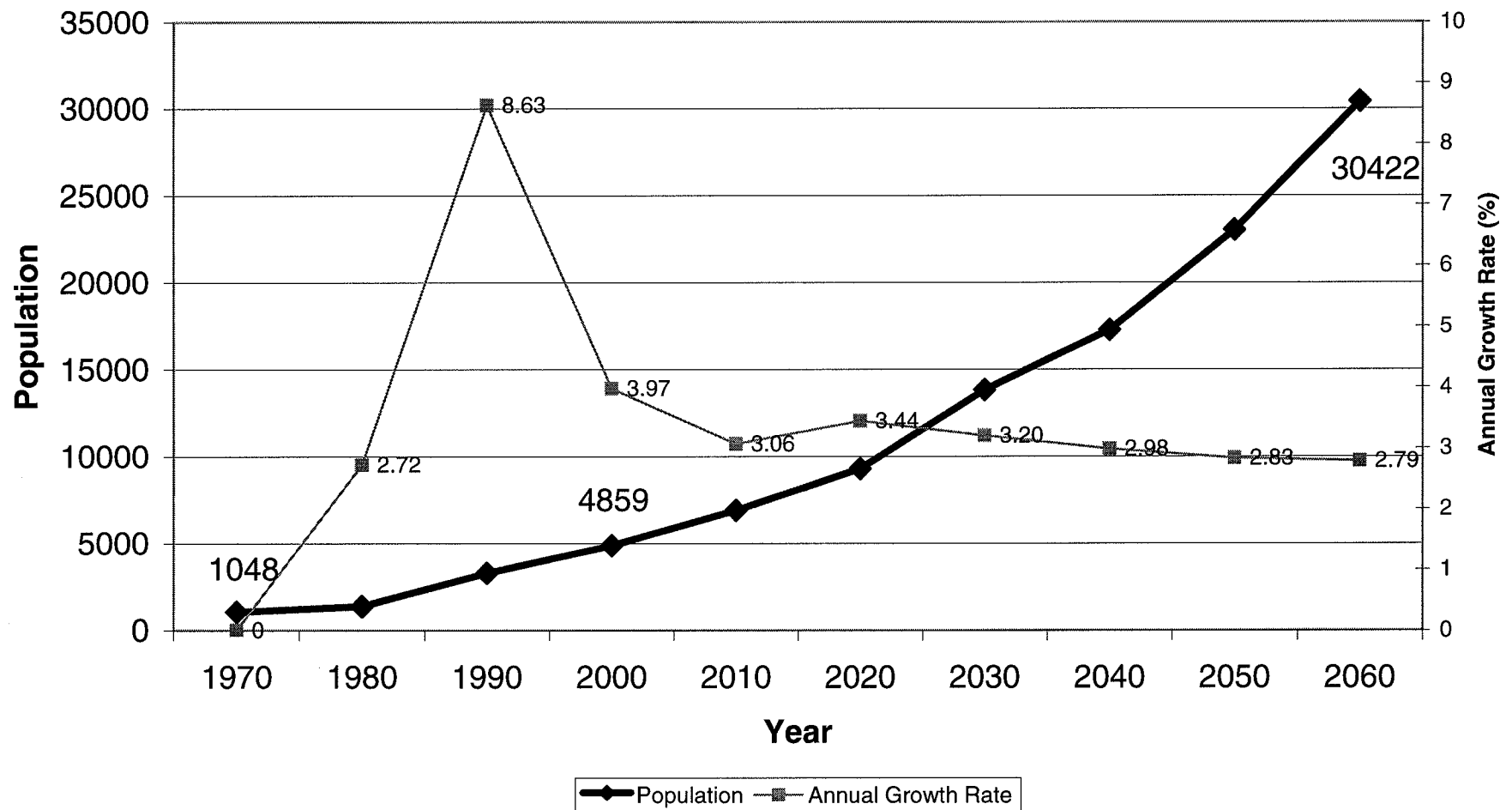
Most Likely Population Projection for the Los Alamos Sub-Basin



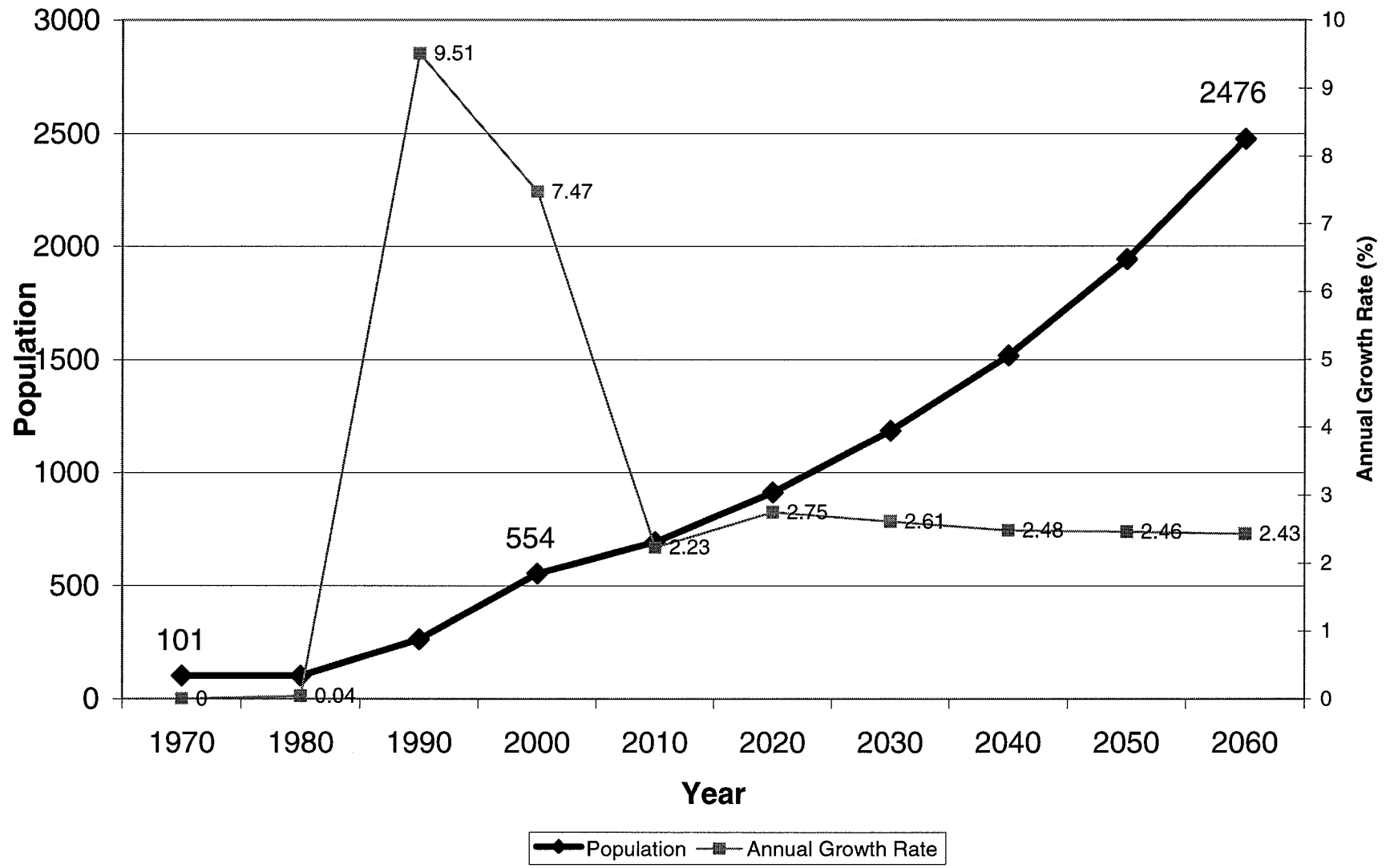
Most Likely Population Projection for the Pojoaque-Nambe Sub-Basin



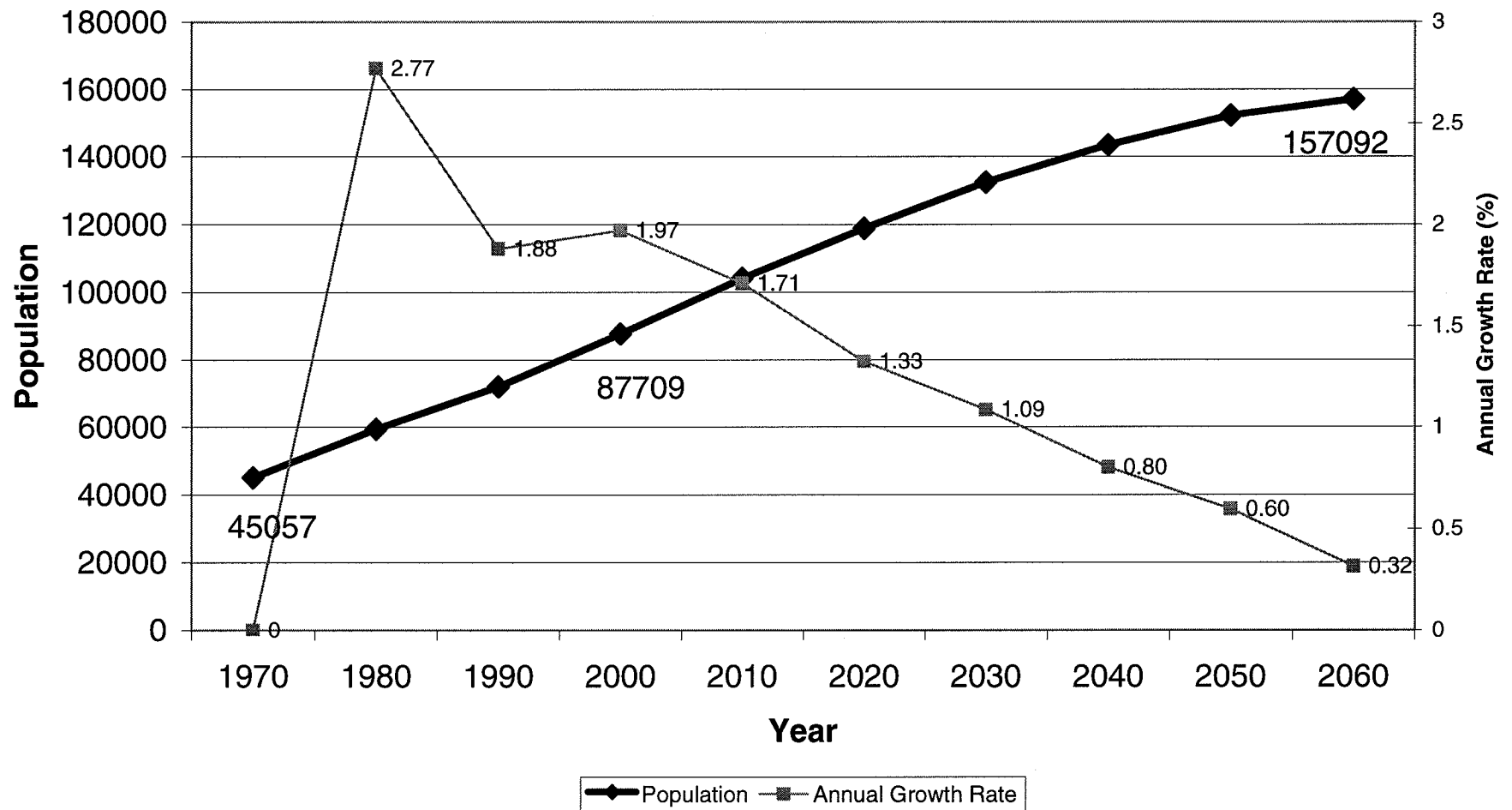
Most Likely Population Projection for the Tesuque Sub-Basin



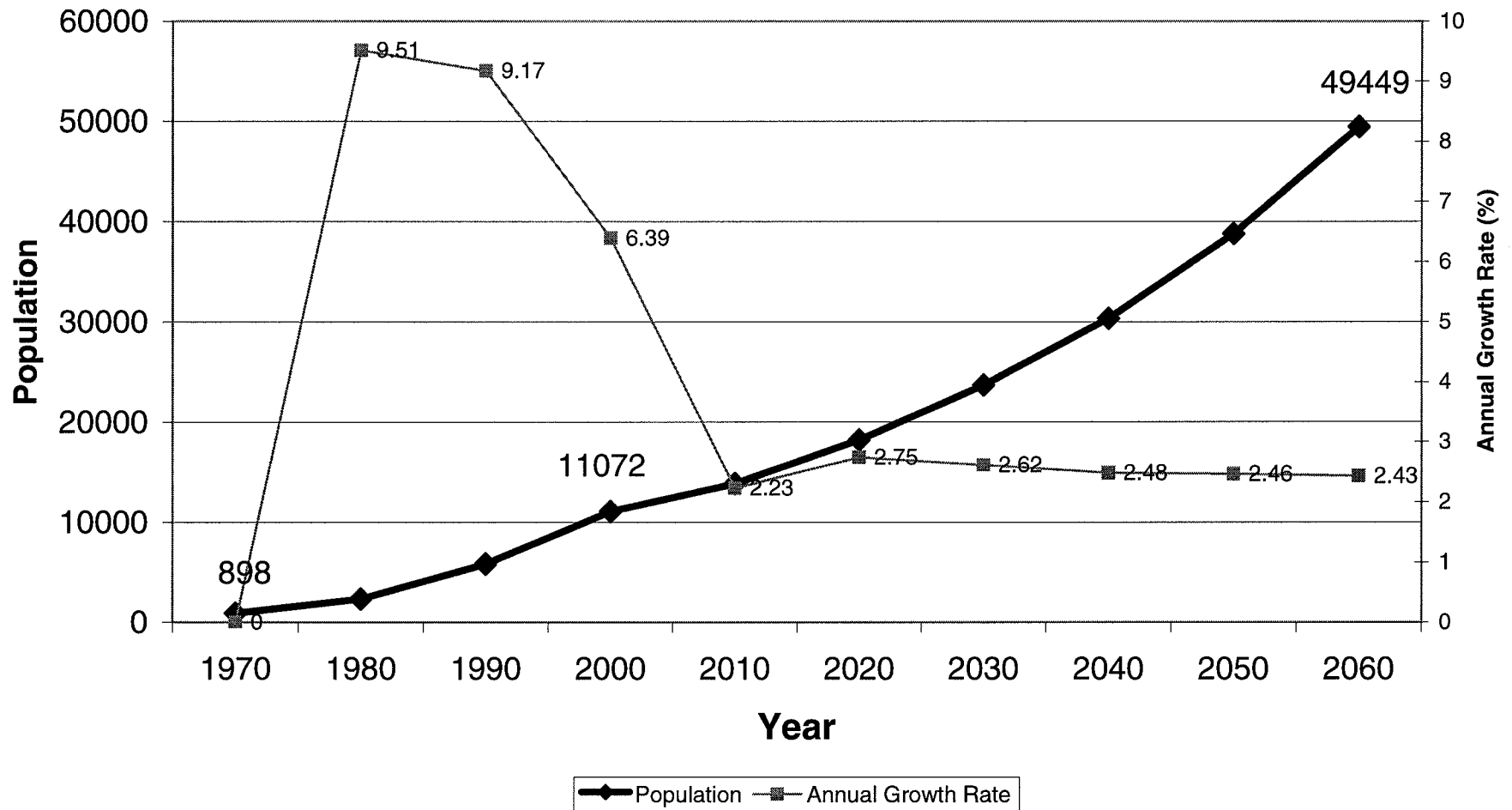
Most Likely Population Projection for the Caja del Rio Sub-basin



Most Likely Population Projections for the Santa Fe Sub-Basin



Most Likely Population Projection for the North Galisteo Sub-Basin



Most Likely Population Projection for the South Galisteo Sub-Basin

